REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-174 are currently pending. No claims have been amended herewith.

In the outstanding Office Action, Claims 1, 2, and 59-61 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,359,513 to Kano et al. (hereinafter "the '513 patent") in view of U.S. Patent No. 5,235,510 to Yamada et al. (hereinafter "the '510 patent"); Claims 3-29 and 62-145 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form; and Claims 30-58 and 146-174 were allowed.

Claim 1 is directed to a method of computerized processing of chest images, the improvement comprising: (1) obtaining a digital first image of a chest; (2) producing a second image which is a mirror image of the first image; (3) performing image warping on one of the first and second images to produce a warped image that is registered to the other of the first and second images; and (4) subtracting the warped image from the other image to generate a subtraction image.

Regarding the rejection of Claim 1 under 35 U.S.C. §103, the Office Action asserts that the '513 patent discloses everything in Claim 1 with the exception of producing a second image which is a mirror image of the first image, and relies on the '510 patent to remedy that deficiency.

The '513 patent is directed to a method and system for the detection of interval change in temporally sequential chest images. The '513 patent discloses a system in which a pair of images is digitized and then subjected to image registration including nonlinear warping of one of the images so that corresponding locations in the two images are aligned with each

other.[1] However, as admitted in the Office Action, the '513 patent fails to disclose the step of producing a second (chest) image which is a mirror image of the first image, as recited in Claim 1.

The '510 patent is directed to a picture archiving communication system (PACS) for storing digital image data for medical use. In particular, Figures 30-32 of the '510 patent are directed to a CAD display of a marker, e.g., the arrow shown in Figures 30-32. The arrow marker is used to indicate the location of an abnormality in the image. Thus, the '510 patent discloses that

> [i]f the abnormality location is present on the right side, the arrow and the ROI of FIG. 32 are converted directly into bit patterns. If the location is present on the left side, the arrow of FIG. 32 is inverted in a mirrorlike manner, and the resulting arrow indicated by a broken line in FIG. 32 and the ROI are converted into bit patterns.[2]

However, as admitted in the Office Action, the '510 patent fails to disclose the step of producing a second chest image which is a mirror image of the first chest image, as recited in Claim 1. Rather, the '510 patent merely discloses displaying two arrow markers that are mirror images of one another to indicate the location of an abnormality in an image. However, the '510 patent fails to disclose producing a mirror image of a chest image, as recited in Claim 1.

Thus, no matter how the teachings of the '513 and the '510 patents are combined, the combination does not teach producing a second image which is a mirror image of the first image, wherein the first image is a chest image, as recited in Claim 1.

Nevertheless, the Office Action states that the '510 patent's disclosure of symmetric arrow markers used to indicate the location of abnormalities in medical images would suggest to one of ordinary skill in the art that the '513 patent could be modified in an obvious way to

[1] '513 Patent, Abstract.
[2] '510 Patent, column 13, lines 23-29.

include the step of producing a mirror image of a chest image and to use the mirror image in an image warping/subtraction process to produce a desirable result. Applicants respectfully disagree and submit that the symmetric arrows disclosed by the '510 patent would, at most, suggest to one of ordinary skill in the art that the '513 system could be modified to include similar reference labels. The Office Action has failed to provide any evidence that a new computer-aided medical image processing technique would be suggested by the '510 patent's image labeling method and the teachings of the '513 patent.

In the outstanding Office Action, the stated motivation for combining the teachings of the '513 and '510 patents is "to increase the precision of outputting computer aided diagnosis data."[3] However, Applicants respectfully submit that the Office Action is simply stating perceived advantages of Applicants' invention, without showing that one of ordinary skill in the art would even have thought to address the problem. Such hindsight reconstruction of Applicants' invention cannot be used to establish a *prima facie* case of obviousness. Specifically, the Office Action has not provided motivation for why one of ordinary skill in the art would select, from all available teachings, the '510 patent's disclosure of the mirrorlike inversion of marker arrows as motivation to modify the teachings of the '513 patent by producing a mirror image of a chest image prior to performing image warping on one of the images, and prior to subtracting one of the warp images from the other image to generate a subtraction image, as recited in Claim 1. The Office Action has failed to identify why one of ordinary skill in the art, would be motivated to incorporate the production of mirrorlike images into an image subtraction process. Applicants respectfully submit that the arrow markers disclosed by the '510 patent are merely directed to labeling image data, and have nothing to do with the image subtraction and nonlinear warping processes disclosed by the '513 patent.

[3] Office Action dated December 6, 2004, page 4.

Recently, the Federal Circuit has cautioned against the use of "generalized statements of advantages without regard to the desirability or the feasibility of modifying the prior art"[4] in providing motivation for a rejection under 35 U.S.C. § 103. The Federal Circuit notes that

> ...conclusory statements of generalized advantages and convenient assumptions about the skilled artisans...are inadequate to support a finding of motivation, which is a factual question that cannot be resolved on 'subjective belief and unknown authority'.... Under such circumstances, with respect to core factual findings, the Board must point to some concrete evidence in the record in support of them, rather than relying on its assessment of what is well recognized or what a skilled artisan would be well aware.[5]

Accordingly, for the reasons stated above, Applicants respectfully submit that a *prima facie* case of obviousness has not been established and that the rejection of Claim 1 (and dependent Claim 2) should be withdrawn.

Independent Claims 59 and 60 recite limitations analogous to the limitations recited in Claim 1. Accordingly, for the reasons stated above for the patentability of Claim 1, Applicants respectfully submit that a *prima facie* case of obviousness has not been established and that the rejection of Claims 59 and 60 (and all similarly rejected dependent claims) should be withdrawn.

Thus, it is respectfully submitted that independent Claims 1, 30, 59, 60, 89, and 146 (and all associated dependent claims) patentably define over any proper combination of the '510 and '513 patents.

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[4] In re Bruce Beasly, 2004 U.S. App. LEXIS 25055 (Fed. Cir., 2004).
[5] Id. at 25072 (citations omitted). Emphasis added.

Consequently, in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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